DOCUMENT RESUME

ED 107 362 PS 007 872

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TITLE Assessment of Children's Psychological Development and Data Analytic Framework in New York City Infant Day Care Study.
PUB DATE 24 Nov 74
NOTE 11p.; Paper presented at the Annual Meeting of the National Association for the Education of Young Children (Washington, D. C., November 1974); For related documents, see PS 007 870-874

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS Child Development; *Data Analysis; Data Collection; *Day Care Programs; *Infants; Interviews; *Longitudinal Studies; Psychological Tests; Research Design
IDENTIFIERS *New York City Infant Day Care Study

ABSTRACT

This report briefly describes the procedures for assessing children's psychological development and the data analytic framework used in the New York City Infant Day Care Study. This study is a 5-year, longitudinal investigation in which infants in group and family day care programs and infants reared at home are compared. Children in the study are assessed on various aspects of psychological development (cognitive, language, social, personality, and emotional), at 6, 12, 18, and 36 months of age. The first psychological evaluation of the children serves as a baseline measure of their psychological functioning. Subsequent assessments are considered outcome measures reflecting the programs' effects. The sequence and nature of tests and interviews used in this aspect of the study are reported and related to the other areas of the study. The report concludes with a discussion of the rationale and design of the data analytic framework used in comparing: (1) initial and demographic characteristics of children and families in group and family day care, (2) infant day care environments, and (3) developmental outcomes. (ED)

ED107362

JAN. 27 1975

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ASSESSMENT OF CHILDREN'S PSYCHOLOGICAL DEVELOPMENT AND DATA ANALYTIC FRAMEWORK IN NEW YORK CITY INFANT DAY CARE STUDY

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PS 007822

National Association for the Education
of Young Children
1974 Annual Conference
Washington, D.C.
November 24, 1974

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The present report deals with procedures for assessing children's psychological development and the data analytic framework in the New York City Infant Day Care Study.

The children in the study are assessed on various aspects of psychological development at 6, 12, 18, and 36 months of age. This includes cognitive and language development, on the one hand, and social, personality, and emotional development, on the other hand. The first psycholigical evaluation of children in the group and family longitudinal infant day care samples, soon after they enter the program, serves as a baseline measure of their psychological functioning. Subsequent assessments, after the children have been in the program for varying periods of time, are considered outcome measures, which reflect the effects of the program on children's psychological development.

At 6, 12, and 18 months the Bayley Mental Scale is administered. Starting at 12 months the children are also given a Verbal Comprehension Test, which assesses their understanding of language in a more systematic and comprehensive way than standard infant tests do. We felt that verbal comprehension would be a more sensitive measure of language competence than verbal production, since at this age children's understanding of language greatly exceeds their ability to express ideas verbally. In addition to the cognitive and language measures, we developed an Index of Social, Personality and Emotional Functioning, which assesses these aspects of children's behavior at 6, 12, and 18 months. The Index is based on observations of children's behavior during the standard infant test situation (i.e., the Bayley) by our Testers and on the basis of all-day naturalistic observations of children in their usual day care settings by our Field Observation Team.

At three years of age various aspects of children's psychological functioning are assessed in the following three situations: (1) under Standard

Test conditions, which include the Stanford-Binet and the Peabody Picture Vocabulary tests; (2) in a 45-minute Play Interview; and (3) Naturalistic Observations of each child in his or her usual day care setting on two different days for 45 minutes each time. Two full mornings are required to complete the 36-month psychological evaluation of each child, and these are scheduled not more than a few weeks apart.

The Play Interview and Naturalistic Observations were included because we did not want to limit our evaluation of children's psychological development to the use of standard tests, such as the Stanford-Binet and Peabody, even in assessing children's cognitive and language functioning. Such standard tests are highly structured, artificial, tap a relatively restricted range of children's behavior, and may be unfair to some children who do not function at their best under these conditions. We wanted to assess children's behavior in their usual day care environment, which is why we included the Naturalistic Observations. At the same time day care environments are likely to differ greatly in many important respects, which may effect children's behavior. The difference between group and family day care environments are most obvious. But even group or family day care environments may differ greatly among themselves. For example, some day care settings may provide children with a rich variety of play materials, while others may be very meager in this respect. Caregivers may vary greatly in how they relate to children, which of course also effects how the child relates to adults. The number of children who are similar in age may vary, particularly between group and family day care, which would also effect how the child relates to peers and utilizes play materials. For these reasons we added the Play Interview, which is a relatively standard situation, in terms of the play materials available to the child and the adult's (i.e., Tester's)

behavior with the child. In contrast to the Standard Test situation, the Play Interview provides an opportunity to see how the child functions in a relatively unstructured situation, where he or she is free to use the play materials in any way, and where there is an interested, responsive adult who is willing to follow the child's lead. While each of the three situations has its drawbacks, by observing children under all three conditions, which complement one another, we will obtain a better composite picture of the child's psychological functioning.

In addition to the Stanford-Binet and Peabody Picture Vocabulary scores, various aspects of children's psychological functioning are assessed on the following five sets of behavioral rating scales, each of which consists of several subscales: (1) Language Competence; (2) Social Competence with Adults; (3) Social Competence with Peers; (4) Adequacy of Emotional Functioning; and (5) Cognitive Style. With some exceptions, the child's behavior is rated on the same scales in the Standard Test situation, the Play Interview, and during the Naturalistic Observations.

The Social Competence Scales were developed by Burton White and, in consultation with him, the Scales were adapted for use in the present sutdy. In constructing the other scales, we combed the early childhood literature but found very few procedures for evaluating the cognitive, language, and emotional functioning of three year old children in a Play Interview or in Naturalistic Observations, which would be suitable for such a large scale study. The Language Competence, Cognitive Style, and Adequacy of Emotional Functioning Scales were developed by our research team, on the basis of other people's work, such as Lois Murphy's and the Blocks, and our combined clinical judgement and experience. Before using them the Scales were pretested on a number of three year old children in group and family day care who are not in our study, in the three situations described earlier. All of the Scales were designed

to provide us with a composite picture of what a healthy, well-developed three-year old would look like in the situations in which we observed him or her. This picture does not include how the child relates to his mother or other members of the family, although we do obtain such information through the Family Interviews, described earlier by Harold Freeman, which complements the picture we obtain through direct observations of the child in his day care setting.

The Psychological Evaluation Team consists of highly experienced Examiners, who are well beyond the Masters level and have had extensive diagnostic, clinical, or educational experience with young children. Spanish speaking children, who constitute almost half of our infant day care sample, are assessed by Examiners who are fluent in both English and Spanish, and test children in their best language. Different forms of the Peabody Picture Vocabulary Test are administered in English and Spanish to the Spanish speaking children to assess their language competence in each language, and to relate this to their language experience in their day care setting and at home.

* * *

Now that we have laid out all of the important pieces of this complicated many-faceted puzzle, which we call the New York City Infant Day Care Study, you're probably wondering how we are going to put all of the pieces together. How are we going to analyze all of this data?

The longitudinal aspect of the study is designed to compare: (1) initial and demographic characteristics of children and families enrolled in group and family infant day care programs; (2) to compare the physical and social environments of the two types of day care programs; and (3) to compare the subsequent development of children and families in these programs. Initial characteristics, infant day care environments, and developmental outcome are

compared in the following major areas: (A) Children's Health, Nutrition, and Physical Development; (B) Children's Psychological Development, which on the one hand includes Cognitive and Language Development, and on the other Social, Personality, and Emotional Development.

Since children in the infant day care samples in the study enter a group or family day care program between two and 21 months of age, we can determine the effects of early versus later entry into a day care on children's development.

The discussion will now deal with the three phases of data analysis described above:

(1) Comparison of Initial and Demographic Characteristics of Children and Families in Group and Family Day Care:

The first question which must be answered, do children and families in group and family infant day care programs differ at the beginning, in terms of certain initial and demographic characteristics, which may effect their subsequent day care experience and development in the major areas of functioning described earlier?

The children in the two types of day care programs are being compared initially on the basis of sex; ethnicity; birth history; current health status; motor and intellectual functioning; social, personality, and emotional functioning; as well as the age the child first entered day care.

The families in the two types of programs are being compared on the basis of their socio-economic status, family composition, and adequacy of their functioning.

These comparisons are important for the following reasons:

(a) First we want to know whether children or families in the two types of day care programs differ initially in any important respect, which may be systematically related to the day care agencies' policies or self-selection

by parents. For example, certain group day care centers are geared to accepting the babies of single teenaged mothers so that such programs would have a higher ratio of such families. On the other hand, certain ethnic groups may prefer one type of day care program, so that such a program might have a higher proportion of families representing that ethnic group.

(b) The second reason for obtaining this data on the longitudinal infant day care samples is that this information is used to select the 6, 18, and 36-month at-home cross-sectional samples, who will be matched to the infant day care sample on certain important demographic characteristics, such as the child's sex and ethnicity, and the family's socioeconomic status and composition. By matching them on these important parameters, the comparisons of child-rearing practices at 6 and 18 months, and the comparisons of children's development at 18 and 36 months of age between the infant day care and at-home samples will be more valid.

(c) Perhaps the most important reason for comparing the two longitudinal infant day care samples in terms of initial and demographic characteristics is that such information is essential in interpreting possible differences in their subsequent day care experience and later development. The first assessment of children and families, soon after they enter day care, serves as a baseline measure of their functioning. Subsequent similar measures at 18 or 36 months of age are considered developmental outcome measures, which reflect the effects of the program on children's or families' development. If children or families in the two types of day care programs differ initially, and these differences are found to be related to later environmental or developmental outcome measures, such initial differences can be statistically taken into account in interpreting our later findings.

(2) Comparison of Infant Day Care Environments:

Comparisons of infant day care environments are being made in the following

areas: (A) Children's Health, Nutrition, and Physical Development; (B) Children's Psychological Development; and (C) Family Development.

Aspects of the physical and social environments related to each of the above areas of functioning are being compared and related to developmental outcome on the following levels:

Level I: This represents the most global, molar level. A single index or score is computed on the basis of all environmental measures obtained, which reflect the quality of the program in that area. For example, all of the physical and social aspects of the infant day care environment assumed to be related to children's psychological development are combined into the Infant Day Care Environment Index. Group and family day care programs will be compared on this Index for children at different ages (e.g., 6, 12, 18 and 24 months of age). At 6 and 18 months the Index scores for children in the At-Home sample will be compared to those of the group and family day care children. Children's individual Index scores will also be related to the 18 and 36-month psychological outcome measures described earlier.

Level II: Within each of the above three areas of functioning, we have constructed a number of subscales, which assess in a more discrete way important variables in each category. For example, in the area of Health, Nutrition, and Physical Development, the following subscales have been constructed: (a) Nutritional Input; (b) Quality of Health Care Provided to Children; (c) Safety; etc. Day care programs will be compared on these subscales, which will also be related to children's development in each area at 18 and 36 months of age.

Level III: Within each of the three major areas a number of specific hypotheses will be tested, derived from unanswered and perhaps controversial questions about infant day care. For example, in the area of children's Psychological Development, are there differences in the amount of attention

children receive from caregivers in group day care centers, family day care homes, and from their own mothers at home? In the area of children's Health, Nutrition, and Physical Development, are there differences in the use and kinds of vitamins (e.g., with or without iron supplements) given to children in the two types of day care programs?

Level IV: This represents the most molecular specific level of data analysis. Tables will be printed out on the item level of all environmental or program input measures used in the study by type of day care program and age. Statistical comparisons will not be made on this data, which will be available to the New York City Agency for Child Development, the Health Department, HEW's Maternal and Child Health Service and the Office of Child Development (our funding agencies), as well as other interested parties, for future program planning and research. For example, an examination of these tables may indicate that in one type of day care program caregivers rarely read to 24-month old children. Recommendations can be made to the day care agency to remedy this situation.

In general significant differences between different types of day care programs on levels I through III will be validated against outcome variables in each area of functioning. That is, does an environmental difference between the two types of day care programs make a difference in terms of children's later development? For example, if we find significant differences in the amount of attention related to their psychological development at 18 or 36 months of age?

(3) Comparisons of Developmental Outcome

Comparisons of developmental outcome between children with varying amounts of Group and Family Day Care experience, as well as children reared at home by their own mothers are made at 18 and 36 months of age in the major

areas described earlier. In assessing children's development we distinguish between two levels of experience and functioning: (i) The first 18 months of life, which represents the infant or sensorimotor period; and (ii) the period from 18 to 36 months of age, where language plays an increasingly important role in children's experience and psychological development. We distinguish between these two levels because the factors which facilitate development on the sensorimotor and verbal levels differ. Infant day care environments and the development of children in the three different child-rearing situations may differ on one level and not the other. Furthermore, in assessing children's development, relationships between different aspects of development will be determined. For example, in assessing children's intellectual development, we will determine the contribution of other important factors, such as the child's personality, health and nutritional status, as well as the family's development. In assessing Family Development, we obtain a baseline measure when the family first enters a day care program and a final outcome measure of the family's functioning when the child is three years of age.

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On the basis of our current projections, we expect to study approximately 450 children and families. Given our resources, we have attempted to devise the most comprehensive evaluation design feasible for such a relatively large number of children, many of whom are assessed several times, but which at the same time would serve our purposes.